

CLAIMS

What is claimed is:

1. A fiber, tape or film comprising (a) a segmented thermoplastic, elastomeric polymer, and (b) an uncrosslinked olefinic thermoplastic, elastomeric polymer, wherein the olefinic thermoplastic, elastomeric polymer is dispersed in a matrix of the segmented thermoplastic, elastomeric polymer.
2. A fiber, tape or film according to Claim 1 wherein the segmented thermoplastic, elastomeric polymer is selected from the group consisting of poly(ether ester), poly(ester ester), poly(ester amide), and poly(ether amide).
3. A fiber, tape or film according to Claim 1 wherein the segmented thermoplastic, elastomeric polymer is poly(ether ester).
4. A fiber, tape or film according to Claim 2 wherein the poly(ether ester) comprises polybutyleneterephthalate and polytetramethyleneoxide.
5. A fiber, tape or film according to Claim 4 wherein the weight content of polybutyleneterephthalate is from about 10% to about 70% and the weight content of polytetramethyleneoxide is from about 30% to about 90%.
6. A fiber, tape or film according to Claim 2 wherein the poly(ether ester) comprises polybutyleneterephthalate and repeat units of 3-methyl-tetrahydrofuran and tetrahydrofuran.
7. A fiber, tape or film according to Claim 1 wherein the olefinic thermoplastic, elastomeric polymer is a propylene polymer.
8. A fiber, tape or film according to Claim 7 wherein the crystallinity of the propylene polymer is from about 10% to about 40%.
9. A fiber, tape or film according to Claim 7 wherein the propylene polymer is ethylene/propylene copolymer.
10. A fiber, tape or film according to Claim 7 wherein the propylene polymer is propylene homopolymer.
11. A fiber, tape or film according to Claim 1 wherein the olefinic thermoplastic, elastomeric polymer is an ethylene/C₄₋₂₀ copolymer.
12. A fiber, tape or film according to Claim 1 which comprises the olefinic thermoplastic, elastomeric polymer in an amount of from about 3% to about 80% by weight.
13. A fiber, tape or film according to Claim 1 which is a fiber.
14. A fiber, tape or film according to Claim 1 which is a tape.
15. A fiber, tape or film according to Claim 1 which is a film.

16. A fiber comprising an axial core comprising a segmented thermoplastic, elastomeric polymer, and a sheath encasing the axial core that comprises an uncrosslinked olefinic thermoplastic, elastomeric polymer.

5 17. A fiber according to Claim 16 wherein the segmented thermoplastic, elastomeric polymer is selected from the group consisting of poly(ether ester), poly(ester ester), poly(ester amide), and poly(ether amide).

10 18. A fiber according to Claim 16 wherein the segmented thermoplastic, elastomeric polymer is poly(ether ester).

19. A fiber according to Claim 17 wherein the polyether ester comprises polybutyleneterephthalate and polytetramethyleneoxide.

20. A fiber according to Claim 19 wherein the weight content of polybutyleneterephthalate is from about 10% to about 70% and the weight
15 content of polytetramethyleneoxide is from about 30% to about 90%.

21. A fiber according to Claim 17 wherein the polyether ester comprises polybutyleneterephthalate and repeat units of 3-methyl-tetrahydrofuran and tetrahydrofuran.

22. A fiber according to Claim 16 wherein the olefinic thermoplastic, elastomeric polymer is a propylene polymer.
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23. A fiber according to Claim 22 wherein the crystallinity of the propylene polymer is from about 10% to about 40%.

24. A fiber according to Claim 22 wherein the propylene polymer is ethylene/propylene copolymer.

25 25. A fiber according to Claim 22 wherein the propylene polymer is propylene homopolymer.

26. A fiber according to Claim 16 wherein the olefinic thermoplastic, elastomeric polymer is an ethylene/C₄₋₂₀ copolymer.

27. A fiber according to Claim 16 which comprises the olefinic
30 thermoplastic, elastomeric polymer in an amount of from about 3% to about 80% by weight.

28. A fiber comprising an axial core comprising an uncrosslinked olefinic thermoplastic, elastomeric polymer, and a sheath encasing the axial core that comprises a segmented thermoplastic, elastomeric
35 polymer.

29. A fiber according to Claim 28 wherein the segmented thermoplastic, elastomeric polymer is selected from the group consisting of

poly(ether ester), poly(ester ester), poly(ester amide), and poly(ether amide).

30. A fiber according to Claim 28 wherein the segmented thermoplastic, elastomeric polymer is poly(ether ester).

5 31. A fiber according to Claim 29 wherein the poly(ether ester) comprises polybutyleneterephthalate and polytetramethyleneoxide.

32. A fiber according to Claim 31 wherein the weight content of polybutyleneterephthalate is from about 10% to about 70% and the weight content of polytetramethyleneoxide is from about 30% to about 90%.

10 33. A fiber according to Claim 29 wherein the poly(ether ester) comprises polybutyleneterephthalate and repeat units of 3-methyl-tetrahydrofuran and tetrahydrofuran.

34. A fiber according to Claim 28 wherein the olefinic thermoplastic, elastomeric polymer is a propylene polymer.

15 35. A fiber according to Claim 34 wherein the crystallinity of the propylene polymer is from about 10% to about 40%.

36. A fiber according to Claim 34 wherein the propylene polymer is ethylene/propylene copolymer.

20 37. A fiber according to Claim 34 wherein the propylene polymer is propylene homopolymer.

38. A fiber according to Claim 28 wherein the olefinic thermoplastic, elastomeric polymer is an ethylene/C₄₋₂₀ copolymer.

25 39. A fiber according to Claim 28 which comprises the olefinic thermoplastic, elastomeric polymer in an amount of from about 3% to about 80% by weight.

40. A process for producing a fiber, comprising (a) preparing a composition by dispersing an olefinic thermoplastic, elastomeric polymer in a matrix of a segmented thermoplastic, elastomeric polymer, and (b) melt-spinning a fiber from said composition.

30 41. A process for producing a fiber, comprising (a) preparing a fiber from an olefinic thermoplastic, elastomeric polymer, and (b) forming a sheath around the olefinic thermoplastic, elastomeric polymer fiber from a segmented thermoplastic elastomeric polymer.

35 42. A process for producing a fiber, comprising (a) preparing a fiber from a segmented thermoplastic, elastomeric polymer, and (b) forming a sheath around the segmented thermoplastic elastomeric polymer fiber from an olefinic thermoplastic, elastomeric polymer.

43. A yarn prepared from a fiber according to Claim 1, 16 or 28.

- 44. A fabric prepared from a fiber according to Claim 1, 16 or 28.
- 45. A garment prepared from a fiber according to Claim 1, 16 or 28.
- 46. In an article for human hygiene, a stretchable band prepared from a fiber according to Claim 1, 16 or 28.
- 5 47. A fiber, tape or film according to Claim 1 further comprising a surfactant or compatibilizer.
- 48. A fiber according to Claim 16 further comprising a surfactant or compatibilizer.
- 10 49. A fiber according to Claim 28 further comprising a surfactant or compatibilizer.